

[2] 吴旭,王保捷,张国华,等.大鼠脑损伤分级自由落体打击模型的建立[J].中国法医学杂志,2005,20(1):1-3.  
Wu X, Wang BJ, Zhang GH, et al. Animal model of graded impact brain injury in rats[J]. Zhongguo Fa Yi Xue Za Zhi, 2005, 20(1): 1-3. Chinese.

[3] Wang FC, Wang T, Ai GP, et al. Serum from rat exposed to radiation, burn, or combined injury can stimulate the PI3K/Akt pathway of IEC6 cells[J]. Acad Med Militar Tert, 2006, 28(6): 518-520.

[4] Sabarirajan J, Vijayaraj P, Nachiappan V. Induction of acute respiratory distress syndrome in rats by lipopolysaccharide and its effect on oxidative stress and antioxidant status in lung [J]. Indian J

Biochem Biophys, 2010, 47(5):278-284.

[5] Cakir B, Kasimay O, Kolgazi M. Stress - induced multiple organ damage in rats is ameliorated by the antioxidant and anxiolytic effects of regular exercise[J]. Cell Biochem Funct, 2010, 28(6):469-479.

[6] Liu T, Geng CW, Shao JX, et al. Changes and clinic significance of related serum enzymes in electrically injured patients[J]. Chin J Burns Wounds Surface Ulcers, 2008, 20(2):86-88.

[7] Erarslan E, Ekiz F, Uz B, et al. Effects of erdosteine on cyclosporine-A-induced hepatotoxicity in rats[J]. Drug Chem Toxicol, 2011, 34(1):32-37.

(收稿日期:2011-03-27 本文编辑:王宏)

· 病例报告 ·

截瘫后异位骨化致髋关节僵直 1 例

赵承武,官宇宝,杨晨,李叔强,冯卫,张大光,刘建国,齐欣  
(吉林大学第一临床医院骨关节外科,吉林 长春 130021)

关键词 截瘫; 骨化,异位性; 关节强直; 髋关节

DOI:10.3969/j.issn.1003-0034.2011.05.013

Ankylosed hip caused by heterotopic ossification after paraplegia ZHAO Cheng-wu, GONG Yu-bao, YANG Chen, LI Shu-qing, FENG Wei, ZHANG Da-guang, LIU Jian-guo, QI Xin\*. Department of Orthopaedics, the First Hospital of Jilin University, Changchun 130021, Jilin, China

KEYWORDS Paraplegia; Ossification, heterotopic; Ankylosis; Hip joint

Zhongguo Gu Shang/China J Orthop Trauma, 2011, 24(5):406-407 www.zggszz.com

截瘫后异位骨化是少见的病例,而伴有髋关节僵直则更为少见,现报告 1 例截瘫后异位骨化致髋关节僵直。

患者,男,41 岁,20 年前因外伤致 T<sub>12</sub>L<sub>1</sub> 椎体骨折,致腹股沟以下双下肢感觉、运动障碍,2 年前出现髋关节不适,反复骶尾部褥疮,近 1 个月疼痛加重。查体:不能坐直,髋关节不能屈曲。右侧髋关节侧位 X 线片显示髂骨下缘、股骨颈、股骨小转子及股骨干上段骨质形态不规则,边缘不规则突出至周围软组织,表面不光滑,其内密度不均(见图 1a)。髋关节 CT 显示右侧髂腰肌内异常高密度钙化影(见图 1b)。行右侧髋关节异位骨化组织切除术,术中见髋关节周围大量异位骨组织。术后患者髋关节活动度增加,屈曲可达 95°,坐姿问题明显改善。

讨论

中枢神经系统损伤后有时会产生异位骨化,脑部和脊髓损伤后异位骨化发生率分别为 10%~20%<sup>[1-2]</sup>和 16%~53%<sup>[3-4]</sup>。髋关节是异位骨化最常发生的部位<sup>[5]</sup>,有时会造成关节僵硬或强直。异位骨化的

发生机制到目前为止还不清楚。

截瘫的患者,虽然不涉及负重及行走,但髋关节周围严重的异位骨化会造成髋关节的僵硬或强直,引发下列问题:①个人卫生问题:由于髋屈曲及外展受限,引起会阴部卫生保健困难和导尿问题,增加了尿路感染的风险。②褥疮:此类患者长

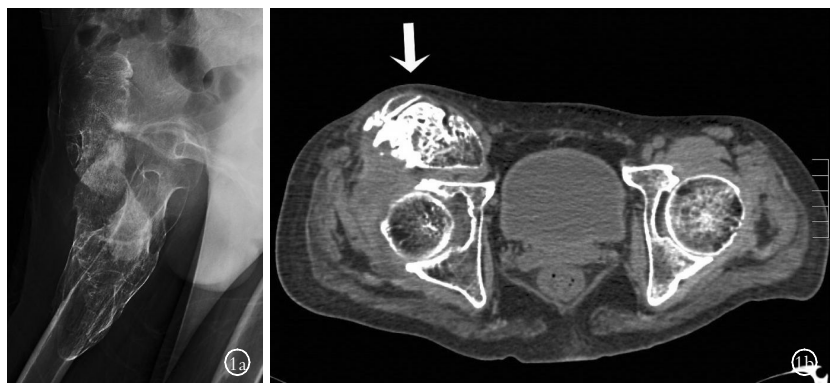


图 1 患者,男,41 岁,截瘫后异位骨化致髋关节僵直 1a. 术前右侧髋关节侧位 X 线片示髂骨下缘、股骨颈、股骨小转子及股骨干上段骨质形态不规则,边缘不规则突出至周围软组织,表面不光滑,其内密度不均 1b. 术前髋关节 CT 示右侧髂腰肌内异常高密度钙化影

Fig.1 A 41-year-old man with ankylosed hip caused by heterotopic ossification after paraplegia 1a.The lateral X-ray of right hip showed the irregular bone formation on the lower edge of ilium, femur neck, lesser trochanter, and the upper femur, with rough surface and uneven density 1b.The preoperative hip CT showed abnormal high-density calcification in right iliopsoas

通讯作者:齐欣 E-mail:adamqi@hotmail.com

期卧床,并且坐位时髋关节不能屈曲,用骶尾部着床,均增加了褥疮概率,发生率超过 50%<sup>[6]</sup>。③坐姿问题:髋关节活动严重受限,无法坐起,降低生活质量。

目前异位骨化的分型较多,常用 Brooker 等<sup>[7]</sup>分型和 Delee 分型<sup>[8]</sup>。本例患者属于 Brooker 4 级或者 Delee 3 级,我们认为在 Brooker 分型中 3、4 级和 Delee 分型中 3 级常会引起髋关节僵直。

手术的目的是增加髋关节的活动范围,恢复一定的屈曲、外展功能。手术方法有:①异位骨切除术:可以增加关节的活动度,防止关节僵直,减少褥疮发生,改善坐姿。②Girdlestone 术式:即髋关节切除术,通过切除骨化的髋关节而增加活动度,但留下较大的死腔会增加感染的机会。③全髋置换术:术后髋关节的活动范围大大增加,可获得满意的疗效<sup>[9]</sup>。

手术治疗的同时还应辅助放疗,预防异位骨化复发。放疗在术后 72 h 内有较好的预防效果<sup>[10]</sup>,也有人认为术前 4 h 与术后 72 h 以内放疗的预防效果没有显著差别<sup>[11]</sup>。术前放疗不应超过 8 h,照射后引起反应性血管扩张,导致术中出血量增加<sup>[12]</sup>。另外,吡哆美辛预防异位骨化也有一定作用<sup>[13]</sup>。作用机制为减轻骨质重建的局部的炎症反应,并抑制间充质细胞向成骨细胞的分化,从而减少异位骨化。

#### 参考文献

- [1] Garland DE. Clinical observations on fractures and heterotopic ossification in the spinal cord and traumatic brain injured populations [J]. Clin Orthop Relat Res, 1988, 233: 86-101.
- [2] Sarafis KA, Karatzas GD, Yotis CL. Ankylosed hips caused by heterotopic ossification after traumatic brain injury; a difficult problem [J]. J Trauma, 1999, 46(1): 104-109.
- [3] Dai L. Heterotopic ossification of the hip after spinal cord injury [J]. Chin Med J (Engl), 1998, 111(12): 1099-2101.
- [4] Lal S, Hamilton BB, Heinemann A, et al. Risk factors for heterotopic ossification in the spinal cord injury [J]. Arch Phys Med Rehabil, 1989, 70(5): 387-390.
- [5] Genet F, Marmorat JL, Lautridou C, et al. Impact of late surgical intervention on heterotopic ossification of the hip after traumatic neurological injury [J]. J Bone Joint Surg Br, 2009, 91(11): 1493-1498.
- [6] Yeoman MP, Hardy AG. The pathology and treatment of pressure sores in paraplegics [J]. Br J Plast Surg, 1954, 7(2): 179-192.
- [7] Brooker AF, Brooker AF, Bowerman JW, et al. Ectopic ossification following total hip replacement incidence and a method of classification [J]. J Bone Joint Surg Am, 1973, 55(8): 1629-1632.
- [8] Puzas JE, Brand JS, Howard GA, et al. Heterotopic bone formation after operation: a quantitative, histologic and biochemical study [J]. Surg Forum, 1984, 35: 521-523.
- [9] 贾林, 康倩. 严重异位骨化伴骨性强直的人工全髋置换术 [J]. 中国矫形外科杂志, 2003, 11(5): 352-353.
- [10] Jia L, Kang Q. Total hip corthroplasty of serions heterotopic ossification with osteal stiffness [J]. Zhongguo Jiao Xing Wai Ke Za Zhi, 2003, 11(5): 352-353. Chinese.
- [11] Schaeffer MA, Sosner J. Heterotopic ossification: treatment of established bone with radition therapy [J]. Arch Phys Med Rehabil, 1995, 76: 284-286.
- [12] Baird EO, Kang QK. Prophylaxis of heterotopic ossification an updated review [J]. J Orthop Surg Res, 2009, 20(4): 12.
- [13] Becker SW, Röhl K, Weidt F. Endoprosthesis in paraplegics with periarticular ossification of the hip [J]. Spinal Cord, 2003, 41(1): 29-33.
- [14] Burd TA, Lowry K, Anglen JO. Indomethacin compared with localized irradiation for the prevention of heterotopic ossification following surgical treatment of acetabular fractures [J]. J Bone Joint Surg Am, 2001, 83(12): 1783-1788.

(收稿日期:2010-06-21 本文编辑:王玉蔓)

·读者·作者·编者·

## 在线浏览《中国骨伤》杂志全文的通知

《中国骨伤》杂志社自 2010 年正式启用稿件远程处理系统以来,读者、作者和编者即可在线 <http://www.zggszz.com> 浏览《中国骨伤》杂志全文。

读者、作者和编者可通过 <http://www.zggszz.com> 注册的 E-mail 和密码登录,在线浏览《中国骨伤》杂志全文。读者需在线充值方可浏览;作者是指自 2011 年第 1 期刊登文章的所有通讯作者可免费在线浏览;编委和特约审稿人可免费在线浏览。

欢迎广大的读者、作者和编者在线浏览《中国骨伤》杂志全文。

《中国骨伤》杂志社